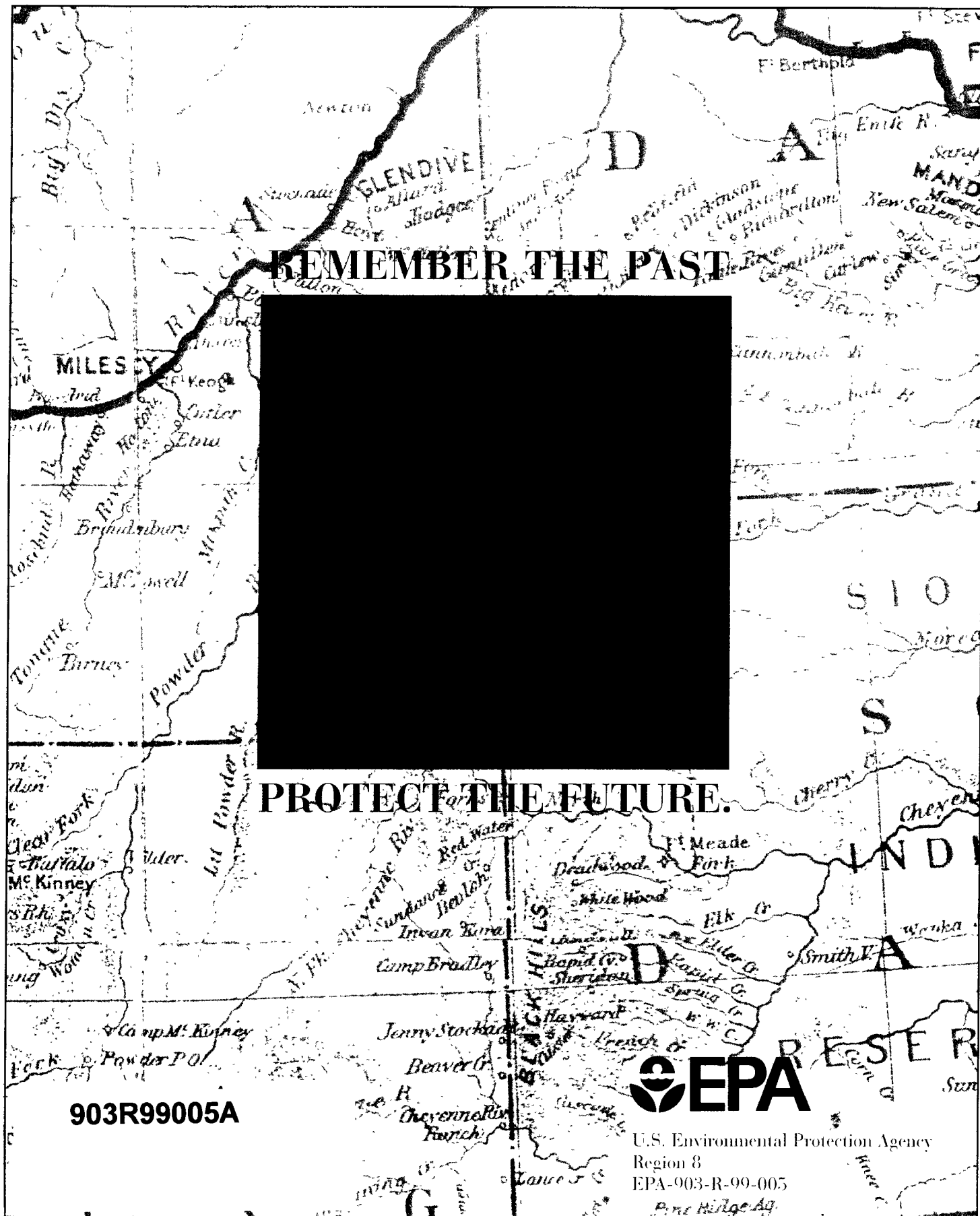


1970

30 YEARS OF ENVIRONMENTAL PROGRESS

2000



REMEMBER THE PAST

PROTECT THE FUTURE.

903R99005A



U.S. Environmental Protection Agency
Region 8
EPA-903-R-99-005

COLORADO | MONTANA | NORTH DAKOTA | SOUTH DAKOTA | UTAH | WYOMING

In marking the 30th anniversaries of Earth Day and EPA, we have many reasons to celebrate. The nation's environment is the cleanest it has been in decades and our economy is soaring. Never before has it been more clear that a healthy environment is an important part of economic prosperity.

EPA Region 5 and the many who share our mission -- state and local governments, 27 tribal nations, businesses, communities and nongovernmental organizations -- have been working together for 30 years to enhance the quality of life enjoyed by the residents of Colorado, Montana, North Dakota, South Dakota, Utah and Wyoming. While we have many reasons to be proud, this is also a time to reflect on the work that remains in reaching our goals for a clean, healthy and sustainable environment. As this report highlights, some very real challenges remain.

Our Region encompasses the heart of the West -- a place defined by abundant natural resources and raw beauty. From dramatic snowcapped mountains to vast open spaces of deserts, plains and canyons, we live and work in states where natural blessings are an integral part of our history, economy and cultures.

The resources that miners, ranchers and farmers have depended on since the early 1800s remain vital to the livelihood of our Region today. Environmental resources are also helping to diversify the goods and services produced here. In recent decades, vibrant commercial, recreational and tourism-based economies have emerged in each of our states, creating communities that depend on a clean environment and healthy ecosystems. Drawn by these assets, people are continuing to move here at unprecedented rates. Ironically, this growth is contributing to a new generation of environmental threats, including sprawl and development, nonpoint source pollution and global climate change.

As environmental issues change in nature and context, EPA has responded and continues to deliver bottom-line results. One thing is certain. We need to be flexible and innovative in meeting the nation's public health and environmental goals. "Command and control" solutions -- though useful in getting us to where we are today -- alone will not serve as well in this new century. We must also reward innovation, create incentives for individuals and firms to be more proactive, and work more effectively with our partners.

This report highlights our shared environmental successes while identifying key challenges we need to focus on together. The partnerships we are establishing today will be the foundation of future progress in protecting public health and the environment.

New alliances are being forged every day to work on creating a sustainable environment with safe drinking water, clean air and healthy places to live, play and work ... not just for our generation, but for all future generations. By working together, I am encouraged that 30 years from now we will be reflecting on another set of impressive accomplishments in protecting the environment in the mountains, plains, deserts and canyons of our states and tribal nations.

Wm Yellowtail

- William P. Yellowtail, Administrator, EPA Region 5



CLEAN AIR

The quality of the air we breathe directly affects our health and well-being. Air pollution is a factor in heart and lung disease, as well as in increased cancer risk. It also harms crops and buildings, reduces visibility, and impacts soil, lakes and streams, and the food web that sustains all life.

Air quality is one of the most obvious examples of the progress we've made since 1970. Thirty years ago, cars emitted 10 times the pollutants they emit today. Factories and power plants released thousands of tons of emissions directly into the air, unchecked and uncontrolled. In the past, Region 8's two biggest cities -- Denver and Salt Lake City -- routinely violated one or more national air quality standards. In 1972, Denver violated the short-term carbon monoxide (CO) standard on 125 days.

The 1970 Clean Air Act introduced tough new rules to control air pollution. Since 1970, we have removed 98% of lead from the air, 79% of soot, 41% of sulfur dioxide, 28% of CO and 25% of the "smog soup" known as ozone. Still, industrial and economic growth have continued. Nationally, from 1970 to 1997, the U.S. population grew 31%, Gross Domestic Product rose 130%, and total vehicle miles traveled jumped 127%.

In the 1970s, Denver air exceeded federal limits for CO virtually every day during the high-pollution winter season. Air quality measures such as controls on industrial sources, cleaner-burning cars, a vehicle inspection and maintenance program, and oxygenated

fuels have achieved impressive results. From 1996-1999, Denver exceeded federal CO standards only once.

Progress Controlling "Criteria" Air Pollutants

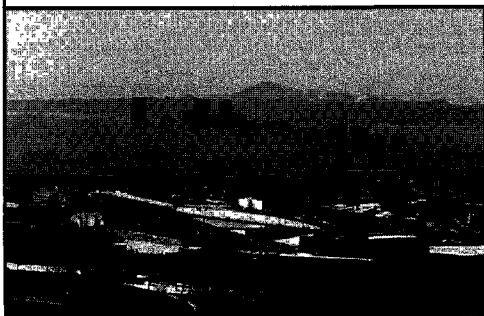
EPA's efforts to reduce air pollution begin with six criteria pollutants identified in the Clean Air Act: Ozone (O_3), nitrogen dioxide (NO_2), particulate matter (PM), sulfur dioxide (SO_2), carbon monoxide (CO), and lead (Pb). For each, EPA has set health-based standards. If local areas exceed these standards, they must take steps to achieve compliance.

Ozone

Ozone, or smog, is a lung irritant formed by the combination of volatile organic compounds (VOCs), oxides of nitrogen and sunlight. Smoggy conditions aggravate asthma, especially among children and the elderly. They can also cause respiratory problems for healthy adults working or exercising outside. Ozone concentrations at Region 8 trend sites dropped 17% between 1988-97. Ozone remains a concern in urbanized areas, particularly along Colorado's Front Range and Utah's Wasatch Front.

Carbon monoxide

Concentrations of CO, a colorless, odorless gas resulting mostly from vehicle exhaust, dropped 46% between 1988-1997 at Region 8 trend sites. Over time, dramatic progress has been made in Salt Lake City and Denver. Colorado's Front Range is now approaching redesignation as a CO attainment area. Successes have



Denver on a "brown cloud" day.

been realized elsewhere also. In Great Falls, Montana, CO concentrations have declined 50% since 1987.

Nitrogen dioxide

NO₂ and nitrogen oxides -- together known as NO_x -- help form the ground-level ozone, or smog, that hangs over cities in the summer. Concentrations of NO₂ decreased 7% at trend sites between 1988-97. NO_x, a powerful lung irritant and a precursor of

acid rain, is especially difficult to control, because it travels easily over great distances.

Particulate matter

Particulate matter is the dirt, smoke and soot in air, PM10, which includes all particles under 10 microns in diameter, dropped 32% at trend sites between 1988-97 in Region 8. Carmakers and industries that have embraced pollution control deserve much of the credit. Some particulate pollution also comes from natural sources like windblown dust or forest fires. Despite progress, PM remains a concern, particularly in areas where inversions trap pollutants for long periods of time.

Sulfur dioxide

SO₂, a major contributor to acid rain, comes from fuel burning and metal smelting. SO₂ at trend sites dropped 44% between 1988-97 in

Region 8, with much of the progress due to controls on coal-fired power plants. Further SO₂ reductions are expected as additional acid rain-control deadlines come due in the next decade. One success story is that of Billings, Montana, which reversed an upward SO₂ trend in the early 1990s by identifying industrial sources and initiating control measures.

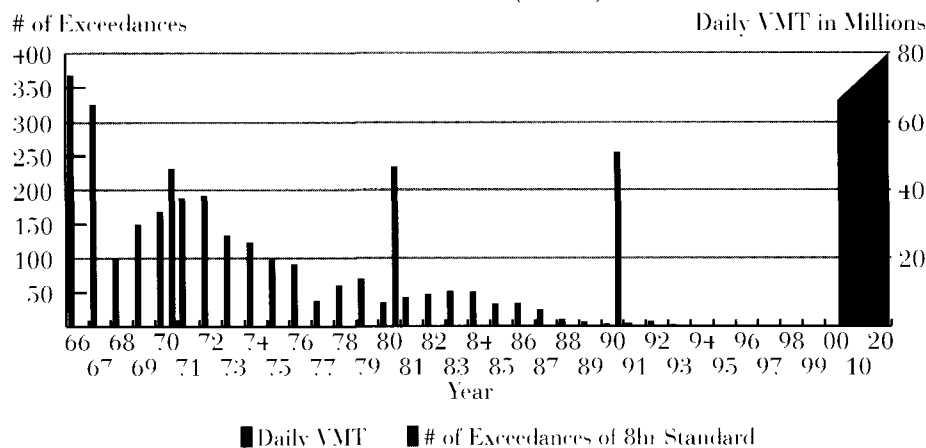
Lead

Unleaded gasoline introduced in 1975, accounts for most of the 67% reduction in lead concentrations at trend sites between 1988-1997. In Region 8, high lead levels are associated mostly with localized industrial activities.

In December 1999, President Clinton announced the strongest standards ever for controlling tailpipe emissions. For the first time, sport utility vehicles, minivans and pickup trucks will have to meet the same standards as passenger cars. This action also calls for cleaner gasoline with less sulfur.

The health benefits of these new standards are significant. Over the next few decades, almost 50 million tons of smog-causing air pollution will be removed from the air nationally. The result means 260,000 fewer asthma attacks in children, 4,300 premature deaths prevented and 173,000 respiratory illnesses avoided. The new rules will also save the nation \$25 billion in medical and other health-related costs.

Carbon Monoxide Exceedances & Vehicle Miles Traveled (VMT) in Denver



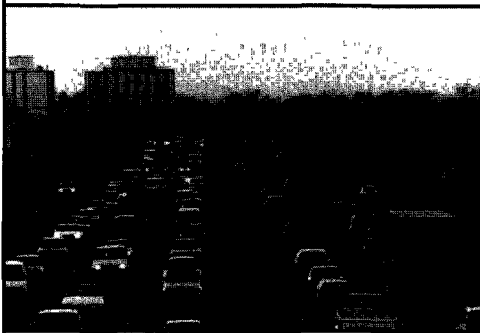
In the 1970s, Denver air exceeded federal limits for CO virtually every day during the high-pollution winter season. Air quality measures such as controls on industrial sources, cleaner-burning cars, a vehicle inspection and maintenance program, and oxygenated fuels have achieved impressive results. From 1996-1999, Denver exceeded federal CO standards only once.

New Standards

In 1997, EPA developed new health-based standards for PM₁₀, an additional standard for PM_{2.5} (particles under 2.5 microns in diameter), and a revised ozone standard. These new standards are the result of years of scientific analysis indicating that health effects in humans occur at levels lower than existing standards. EPA is pressing in federal court to adopt these standards, which will protect sensitive groups such as children, the elderly and those with respiratory disorders.

Air Toxics

Congress amended the Clean Air Act in 1990, asking EPA to reduce air pollution from a vast group of 188 additional "toxics" -- hazardous pollutants that contribute to cancer, birth defects and neurological disorders. To date, EPA has issued 44 new emissions standards regulating 79 different source categories, such as steel mills, paint factories and dry cleaners. Dozens more industry-specific deadlines will be adopted over the next few years, leading to significant cuts in toxic emissions.



Population growth brings new pressures -- particularly increased vehicle traffic -- on air quality.

Air Pollutant Concentrations Are Declining

Average Concentrations of Criteria Pollutants at R8 Trend Monitoring Sites 1988 vs 1997

Pollutant	# Trend Sites	Standard	1988 Average	1997 Average	Decline
CO	22	8 hr Max - 9ppm	8ppm	4.3ppm	↓ 46%
PM ₁₀	101	Annual Mean - 50 ug/m ³	28.1 ug/m ³	19.2 ug/m ³	↓ 32%
Ozone	20	1 hr Max - 0.12ppm	0.098ppm	0.081ppm	↓ 17%
SO ₂	33	Annual Mean - 0.03ppm	0.0064ppm	0.0036ppm	↓ 44%
Lead	7	Max Avg - 1.5 ug/m ³	0.9 ug/m ³	0.3 ug/m ³	↓ 67%
NO ₂	17	Annual Mean - 0.053ppm	0.014ppm	0.013ppm	↓ 7%

Monitoring trends are influenced by the distribution and number of monitoring sites in the Region and therefore can be driven largely by urban concentrations. For this reason, they are not indicative of background regional concentrations.

ppm = parts per million ug/m³ = micrograms per cubic meter

Since 1970, all six of the "criteria" air pollutants identified in the Clean Air Act have shown improvement. Concentrations of pollutants in the air, measured at various monitors across the Region, have been greatly reduced. This graphic shows progress between 1988 and 1997.

Visibility

Protecting air quality from the types of degradation that reduce visibility is a high priority. Without the effects of pollution, a natural visual range is 140 miles in the West. Fine particles and gases have reduced this range to 33-90 miles. This impairment threatens our enjoyment of Region 8's vistas and vast natural beauty. A new Regional Haze Rule calls for states to set visibility goals in national parks and wilderness areas and develop long-term pollution prevention plans. EPA is also working with states, tribes and federal agencies to improve visibility conditions.

Regional Challenges

Despite progress, clean air improvements are being offset by rapid growth in the sheer number of pollution sources, especially in rapidly growing communities. Population growth brings more

vehicles, industrial activities and fuel burning for heat and electricity. In Denver, for example, vehicle traffic is projected to increase 25% by 2020. These pressures will make maintaining air quality improvements a big challenge.

In the mid 1990s, emissions from coal-fired power plants near Craig and Hayden, Colorado severely impacted visibility in this Class 1 wilderness and contributed to the most acidic snowfall west of the Mississippi. In partnership with EPA, other federal agencies and nonprofits, utility companies committed to controlling emissions. The controls at the Hayden plant for example -- to be fully installed in 2000 -- will cut total annual emissions by 14,000 tons (nearly 85%) and NO_x emissions by 5,000 tons (over 40%).



CLEAN WATER

Water quality has always been the backbone of environmental protection. When EPA was formed in 1970, many of its responsibilities came from the old Federal Water Quality Administration. And once the agency was up and running, many of its early headlines came from enforcement of the 1972 Federal Water Pollution Control Act Amendments. The 1974 Safe Drinking Water Act quickly followed, as did the 1977 Clean Water Act -- a stronger, retitled version of the 1972 law.

Water is also the lifeblood of the West. Most areas in Region 8 average less than 15 inches of rainfall a year -- a precious commodity indeed. Yet, we haven't always recognized the importance of water. Before EPA and the Clean Water Act, hundreds of communities discharged raw sewage into waterways such as the South Platte, Arkansas and Missouri Rivers. Many rivers were literally open sewers.

Today, water quality and quantity are recognized as vital to supporting Region 8's people, economies and natural systems. However, challenges remain. While we have addressed the major point sources of pollution to our waters -- such as wastewater and industrial discharges -- more difficult-to-manage pollution from mining, agriculture and urban runoff still poses threats to surface and groundwater quality.

The Clean Water Act

The Clean Water Act spells out two basic goals: eliminating pollutant discharges into the nation's lakes

and streams; and restoring and maintaining the chemical, physical and biological integrity of our waters. In simpler terms, the Act calls for lakes and rivers to be clean enough to support aquatic life and human uses such as swimming, fishing and drinking water supplies. In Region 8, EPA's efforts to reach those goals include:

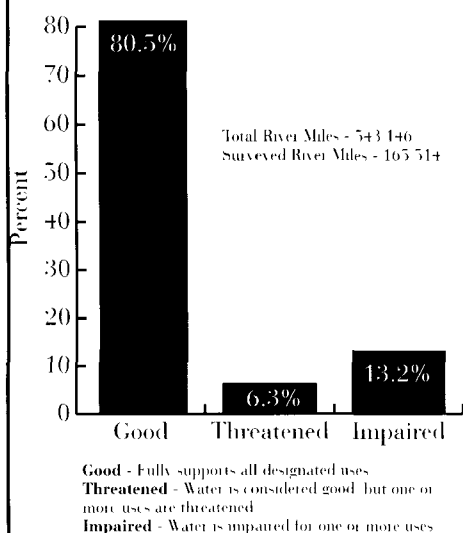
- *Establishment and enforcement of permit limits.* EPA and the Region 8 states control pollutant discharges from over 2,000 point sources including sewage treatment plants, storm water systems, animal feedlots, factories, mills, active mines, metal works, oil wells and food processors. Nationally, this program prevents well over a billion pounds of toxic pollution from entering our nation's water each year.

- *Nonpoint source controls.* Today, as much as 98% of water quality problems begin with runoff from agriculture, mining sites, residential and urban lands, or atmospheric deposition. These scattered pollution sources are more difficult to address because they are so numerous and defy end-of-pipe control measures. Since 1989, EPA has awarded more than \$58 million in grants to Region 8 states and tribes to support nonpoint source programs. EPA also provides technical assistance to help solve water quality problems from irrigation, livestock production, forestry, mining and urban sources.

- *Clean Water State Revolving Fund.* Since 1987, EPA has awarded more than \$513 million to Region 8 state

Under the Clean Water Act, states, tribes and local agencies monitor the quality and safety of their surface waters for a variety of designated uses, from drinking water to swimming and boating, to supporting aquatic life. Each state, and some tribes, develop standards for these uses and a monitoring program based on federal guidelines. States report on the status of water quality to EPA and Congress every two years.

Summary of Use Support Rivers and Streams



Source: State 305(b) Reports

Region 8 state monitoring activities reveal that a large portion of surveyed rivers and streams are clean enough to support designated uses such as fishing, swimming and aquatic life.

revolving loan funds to help states build, upgrade and fund wastewater, storm water and pollution control projects. States match 20% of EPA's annual award amounts and distribute loans for high-priority projects. Recently, EPA has begun encouraging the use of these funds to support nonpoint source work.

Groundwater Protection

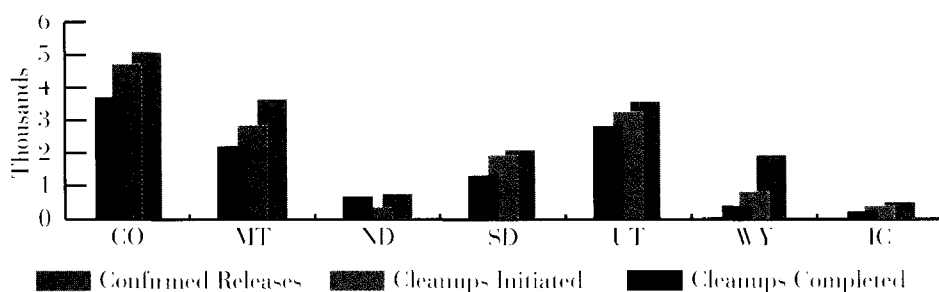
Over one-third of Region 8's population relies on underground aquifers for drinking water. As our states continue to grow, groundwater use is increasing, making its protection a priority.

To protect groundwater quality, EPA supports states and tribes in identifying and cleaning up underground storage tanks (USTs) that are leaking petroleum and other hazardous substances. As of the end of 1999, cleanups of leaking tanks have been initiated or completed at over 14,000 sites in Region 8. EPA and the states also regulate

In 1986, Missoula, Montana's drinking water wells were threatened by tetrachloroethylene (perc or PCE), a toxic solvent used in dry cleaning. From 1990-93, EPA awarded grants to the city and county to address chemical contamination in the groundwater. Partnerships have developed among local government officials, private business owners and citizen groups to protect their sole drinking water source. Success has been dramatic, with PCE detections in wells reduced from a high of 12 wells in 1989 to zero in 1998.

over 25,000 active UST systems. EPA is focused on enforcing new tank requirements that call for substandard USTs be upgraded, replaced or closed to meet a national goal of 90% compliance by 2000.

Progress Cleaning Up Leaking Underground Storage Tanks



IC - Denotes Indian Country -- Includes Data Through 9/99

Source: State reporting

EPA's Underground Injection Control program also protects underground drinking water sources. Region 8 has thousands of Class V injection wells or drainfields, shallow disposal systems that inject liquid wastes underground, above water sources. Wells vary in size, type and engineering complexity, and some pose potential hazards to groundwater. EPA recently issued stricter regulations banning new wells for disposing used motor oil and large-capacity cesspools, and phasing out existing wells. To date, Region 8 and state agencies have closed more than 1,000 Class V wells to protect groundwater resources. Region 8 also recently produced a video --

available at no cost -- to help the regulated community comply with Class V rules.

Pesticides

Pesticides have been recognized as a serious threat to water quality for decades. The effects of DDT and other highly toxic pesticides -- given widespread attention by Rachel Carson's groundbreaking book *Silent Spring* -- were an early impetus for EPA activities. Since the 1970s, EPA has led the effort to eliminate the most dangerous pesticides and regulates the registration and use of thousands of others.

Region 8 also works with states and tribes to develop pesticide

management plans that focus on protecting vulnerable groundwater resources. In addition, Region 8 provides grants for pesticide applicator training and certification programs. By providing safety training emphasizing proper techniques for use, storage and disposal, these programs reduce human and environmental pesticide exposure. In Colorado alone, EPA Region 8 has trained over 14,000 farmers and ranchers.

Animal Feeding Operations (AFOs)

The influx of large-scale livestock facilities to the Region has become a significant environmental issue. Manure and wastewater from these operations can pollute waterways with excess nutrients, organic matter and pathogens. These pollutants can contaminate surface and groundwater, causing fish kills and outbreaks of toxic algae and microbes. To address these concerns, EPA, with the U.S. Department of Agriculture, recently developed a Unified National Strategy for Animal Feeding Operations. The strategy employs a range of flexible, common-sense tools to reduce potentially harmful runoff from AFOs.

Region 8's AFO team has conducted one-on-one visits with each state to learn how their efforts can fulfill the national goal of controlling water pollution. The team is seeking extensive input



Widespread and difficult-to-manage "nonpoint" pollution sources are the biggest source of water quality problems nationally and in Region 8. The runoff of nutrients, pesticides and sediments from irrigated cropland can impact both surface and groundwater quality.



Clean water is a valuable resource for Region 8 residents and visitors who rely on our rivers, lakes and ground-water for drinking water supplies. Our waters also support recreation such as fishing, boating and swimming.

from all stakeholders, including federal partners, state agricultural and water pollution agencies, producer groups and farmers

Drinking Water

The 1974 Safe Drinking Water Act (SDWA) requires EPA to set drinking water standards and regulate public water systems (PWSs). These systems must monitor regularly for contaminants and meet specific quality standards and treatment requirements. To maintain local

drinking water quality EPA and the states monitor and record the testing of over 80 pollutants in more than 7,000 public water systems in Region 8.

In large part due to the SDWA, the U.S. enjoys one of the most reliable drinking water supplies in the world. Although standards for contaminant levels are rarely violated, nitrates, bacteria, chemicals and other contaminants still threaten our drinking water.

EPA recognizes that building treatment facilities and monitoring for contaminants is

Region 8 Population Served by CWSs in Violation of Health-Based Standards

	Population Served by Systems Reporting Violations	% of Total CWS Population
1993	218,612	2%
1994	346,384	4%
1995	247,876	3%
1996	191,376	2%
1997	259,957	3%
1998	248,019	3%

Community water systems are making major investments in water treatment systems and source water protection to ensure safe and reliable drinking water supplies. This graphic shows that over 95% of the Region's community system users have consistently safe drinking water. Chronic or one-time violations typically affect less than 5% of those served.

This national strategy leverages federal assistance and support to strengthen leadership at the local level in protecting valuable water resources. Region 8 has focused on partnering with states and other agencies to target high-priority watersheds, participating in watershed-based partnerships, and intensifying the evaluation of water bodies and aquatic systems. In 1999, each state developed rankings of their watersheds -- called Unified Watershed Assessments -- which will be used to focus resource investments and restoration strategies in upcoming years.

not enough -- the water we drink must be kept clean in the first place. The 1996 SDWA amendments emphasize pollution prevention, with a new focus on protecting drinking water sources from contamination.

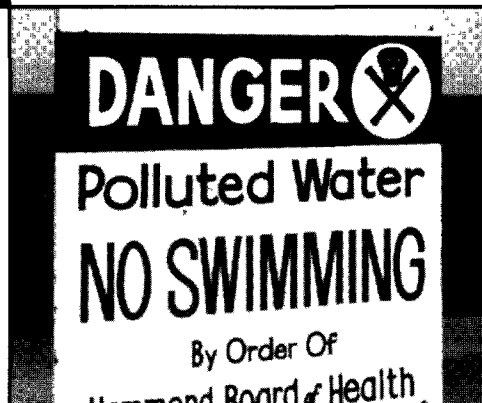
To that end, EPA provides funding and technical support to states, tribes and local governments for source water assessment and protection, groundwater protection, and wellhead protection. Source water assessments, for example, help states estimate a PWS's susceptibility to contaminants and create source water management plans.



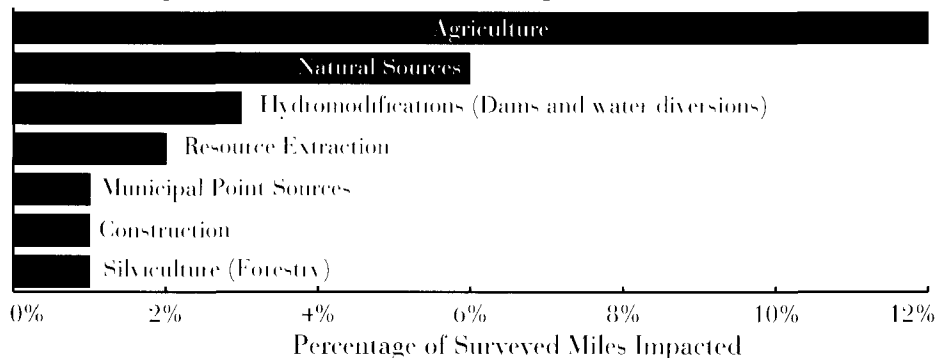
So, how are we doing? Drinking water data collected by EPA and the states indicate that most systems in Region 8 are in full compliance with health-based standards, while a few report violations for various types of contaminants. Most violations occur in smaller, rural systems with resource and expertise limitations. EPA's safe drinking water goals and ongoing pollution prevention and infrastructure improvements are expected to ensure even more progress in the future.

Enforcing environmental laws is critical to protecting and restoring water resources. A recent Region 8 case involved about 15 square miles of groundwater contamination from oil and gas development in one of Montana's pristine aquifers. In 1999, Region 8 ordered eight oil and gas companies to provide bottled drinking water to 20 residences with contaminated private wells on the Fort Peck Indian Reservation. Region 8 anticipates requiring a long-term remedy for this groundwater contamination, which may include re-plugging wells, permanently supplying an alternative water source and/or cleaning the aquifer.

The 1996 amendments also created drinking water state revolving funds for water treatment plants and technology improvements. EPA offers matching grants to states that establish revolving loan funds for high-priority water treatment projects.



Leading Sources of Pollution in Region 8 Rivers and Streams



Source: 1998 State 305(b) Reports

EPA is placing an increased emphasis on community-based watershed protection. Instead of focusing on single pollution sources or problems, the watershed approach takes a more comprehensive, holistic view of conditions, stressors and problems. For example, this approach may address protection for drinking water sources and wetlands areas, air deposition of toxic chemicals, polluted runoff from urban areas, as well as more traditional industrial and municipal wastewater discharges.



12

1982

1981

CLEAN LAND

Our society makes, consumes and disposes of chemicals and waste products in huge quantities. Since 1945, the amount of waste generated in the U.S. has multiplied more than 500 times, making waste management one of our most difficult and expensive environmental challenges. Swollen landfills, abandoned factories, leaking oil wells, and illegally dumped or improperly managed wastes and toxics present serious human health and environmental risks. Hazardous substances can migrate through the soil to where we work, live and play, and can contaminate the air we breathe and the water we drink.

For generations, few people thought twice about burying and dumping garbage or wastes. "Out of sight, out of mind" was the prevailing mindset. It wasn't until the frightening stories of contamination, illness and death in places like Love Canal, New York, the Valley of the Drums, Kentucky, and Bhopal, India in the 1970s and 1980s that decisive actions were taken.

Responding to increased awareness and public demand, Congress passed laws that EPA uses to protect our land from hazardous materials. The passage of the Resource Conservation and Recovery Act (RCRA) in 1976 enabled the tracking of hazardous materials from production to disposal. Superfund was established in 1980 to clean up the nation's worst hazardous waste sites. Furthermore, citizens must now be kept informed about the presence and potential danger of toxic materials in their communities.

Resource Conservation and Recovery Act

RCRA mandates a comprehensive, life-cycle approach to regulating hazardous wastes from "cradle to grave." RCRA defines hazardous wastes as those which are ignitable, corrosive, reactive (explosive) and toxic. EPA and states set standards for how much waste facilities can have and what they have to do to manage or transport it, and outline permit requirements for waste treatment, storage and disposal. EPA's efforts under RCRA focus primarily on three basic elements: prevention, safe waste management and corrective action.

Prevention is EPA's strategy of first choice for hazardous wastes because it focuses on preventing pollution at the source, before waste is generated. This minimizes the load on disposal facilities by diverting wastes from traditional waste streams. Region 8 and the states provide education, technical assistance and outreach to industry, promote waste exchanges and networks, and assist small businesses in reducing the volumes of waste generated. Waste minimization has also been incorporated into enforcement actions where penalties are reduced or negotiated to include waste minimization projects. Pollution prevention and waste minimization opportunities are also evaluated and promoted during hazardous waste inspections.

The safe management of hazardous waste, particularly by having appropriate controls in place for all facilities that manage hazardous materials, has always been the center of the RCRA program. EPA's national goal is to

have 90% of all required permits issued by 2005, with an interim goal of 62% by 1999. Region 8 expects to meet the 90% goal before 2005, and has exceeded the 1999 interim goal by having approved controls in place for 65% of facilities that need them.

Corrective action, or cleanup of contamination at the worst waste management facilities, has become the RCRA program's top priority. EPA has set goals of controlling human risk and groundwater contamination at these high-priority facilities. By 2005, 90% of the high-priority facilities must have all current human risks under control and 75% of current groundwater releases under control. The 1999 interim goals are 20% and 10%, respectively. Region 8 has identified 55 facilities on the national list, and is currently ahead of the pace for the interim national goals, with 40% of these facilities meeting the human risk indicator and 33% achieving the groundwater measure. Region 8 is working with the states to assure achievement of the 2005 goals.

Superfund: Faster, More Effective Cleanups

Where RCRA addresses operating facilities, Superfund is EPA's program to clean up sites where serious hazardous wastes and contamination have been left behind. Sites requiring large-scale, long-term and often big-ticket cleanups are known as "remedial" sites. These include most of the 1,300 sites on the National Priorities List (NPL). To date,

Region 8 has placed 45 sites on the NPL and proposed seven others. "Removal" sites, in comparison, are typically smaller-scale, shorter-term cleanups, ranging from a few months to a few years.

Remedial program

Congress created the NPL anticipating that the whole Superfund program would encompass just a few hundred sites. Congress also intended that those who caused the contamination would pay their fair share to clean up the site.

Reality was more complicated. Many sites required extensive engineering and/or scientific studies before cleanup could begin. Also,

many of the cleanup technologies that are standard today were developed as Superfund grew up. And not surprisingly, few parties responsible for contamination agreed to assume the costs.

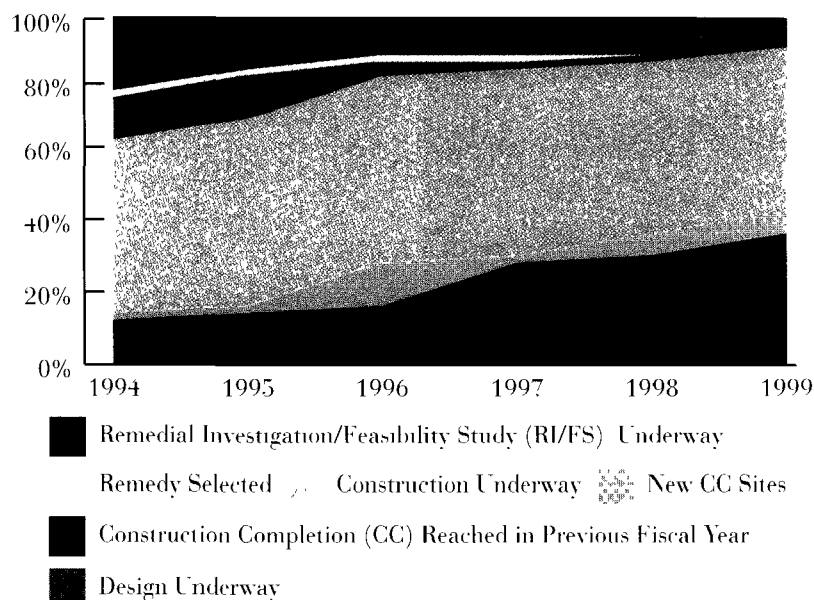
In response, the Superfund law has been fine-tuned many times. Over time, Congress expanded EPA's enforcement and cleanup authority and has significantly accelerated the pace of the program. Recent administrative reforms have also produced a faster, fairer and more efficient cleanup program. In Region 8, more Superfund sites have been cleaned up in the past six years than in all previous years of the program combined. At the end of 1999, construction activities had been completed at 18 NPL sites. Five of these sites have subsequently been removed from the list following completion of long-term cleanup activities.

Two major Denver sites, the Rocky Flats nuclear weapons plant and the Rocky Mountain Arsenal, are being restored quicker and at less cost due to EPA's innovative approaches. At Rocky Flats, the original 50-year, \$22 billion cleanup plan has been reduced to 10 years and \$12 billion. The Arsenal's \$2 billion, 10-15-year cleanup plan has gained the support of the State of Colorado, the U.S. Army, Shell Oil, and the local community. Many of its 21 remedial actions are nearing completion, including the destruction of over 10 million gallons of hazardous liquids resulting from nerve gas production.



Summitville Mine Site, Colorado. In 1992, EPA stepped in to restore an ecological tragedy: leaking cyanide, acid and metal-laden mine waters killed 17 miles of the Alamosa River. In taking over the infamous Summitville, CO NPL site, EPA has directed cleanup activities such as capping the cyanide heap leach pad, plugging mine adits, constructing a 90-million-gallon wastewater holding pond and revegetating disturbed land. Water quality downstream has improved considerably, with local residents reporting signs of life returning to the river.

Progress of National Priorities List Sites in Region 8



Region 8's portfolio of Superfund sites includes eight federally owned NPL sites. Cleanup efforts at these sites are transforming blighted areas into economically vital and productive ones. The Rocky Mountain Arsenal, for example, is now the largest urban wildlife refuge in the nation. The site is expected to contribute significantly to non-industrial development in Commerce City, CO. The city's mayor recently announced the first new residential housing project in 40 years.

EPA, through the Base Realignment and Closure (BRAC) process, is also working at five military installations in Region 8 to ensure that rapid and effective environmental restoration occurs as these sites close or are renovated.

Some big sites in Region 8 are being cleaned up without being on the final NPL. In 1998, Kennecott Utah Copper, state and local agencies, and EPA reached an agreement to clean up the largest open-pit mine in the U.S. Over \$200 million has already been spent on the cleanup.

The Superfund program emphasizes restoring contaminated sites through partnerships with all stakeholders. Region 8 focuses on working with states, tribes and local governments to bring local solutions to sites, while understanding that public involvement is critical to the process. Without stakeholder support and understanding, no project will satisfy the needs of the community it's designed to protect.

Removal Program

The highest priority of the Superfund program is to make sites

safe for those living or working nearby. The removal program delivers a quick response to immediate threats posed by the release of hazardous substances. Typical situations include fires or explosions, a contaminated drinking water supply, and threats to humans from exposure to hazardous substances. Most situations are emergencies where EPA teams up with other government agencies rapidly.

Region 8 receives over 900 hazardous substance release notifications a year, but most do not require federal removal action. Private parties are increasingly willing to clean up releases in the interest of maintaining a positive corporate image. Since the mid-1980s, EPA has funded between 30-50 of these shorter-term cleanups annually, at a cost of anywhere from \$30,000 to \$3 million each. Region 8 has completed over 200 removals to date.

Site Redevelopment

Whenever possible, the Superfund program looks for opportunities to return sites to local municipalities or business interests for possible redevelopment. For example, a portion of the Denver, CO Radium Superfund site has been cleaned up and is now home to a thriving Home Depot store. Another example is the Anaconda Smelter Superfund site in Montana, which has been transformed into a golf course with hiking trails and plans for future commercial and residential development.



LIVABLE COMMUNITIES

Environmental progress is ultimately measured at the community level. Nationally, EPA's laws, regulations and technical criteria give us authority and a scientific basis to make good decisions. But at their core, most environmental issues are about safety and quality of life at home and in the workplace. Livability can be measured in many ways: the quality of air we breathe, the wholesomeness of our food, the sustainability of local economies and even the length of our commutes.

Over the past decades, EPA has implemented hugely successful campaigns to reduce environmental hazards, including the elimination of lead paint and gasoline in the 1970s, the removal of asbestos materials in the late 1980s and radon gas mitigation in the early 1990s. EPA continues to address potential risks in our homes, schools and workplaces.

Asthma and Children's Health

Asthma remains a persistent problem in the U.S. The number of children afflicted has doubled in the past 10 years, currently affecting almost five million nationwide. Nationally, the asthma rate among children ages 5-14 rose 74% between 1980-94. Asthma can be triggered by irritants and allergens such as smoke, dust, molds, mites and pet dander.

Asthma is a big concern in heavily populated areas. In Denver County alone, 8,210 cases of childhood asthma

were reported in 1998 -- along with over 19,000 adult cases. Low-income and minority children are afflicted at much higher rates. To minimize asthma triggers, EPA promotes the use of common-sense, low-cost solutions for clearing the air in homes and schools.

Since children are most vulnerable to pollution of all types, EPA has made a major commitment to children's health. Since 1995, EPA has considered health risks to infants and children in all risk characterizations and public health standards set for the United States. This includes air and drinking water standards and food quality protection. In Region 8, EPA's Indoor Air Quality Tools for Schools program has helped schools provide healthy environments for students and staff. Region 8 is also working with the Southern Ute and the Rocky Boys tribes to identify hazards to children on their reservations.

Radon

Radon, a naturally occurring radioactive gas, is the second leading cause of lung cancer in the U.S. It is odorless, tasteless and colorless, and found naturally in soils throughout the world. Many areas in Region 8 have the potential for high indoor radon. EPA's radon program focuses on risk reduction through education and outreach, training of radon professionals, technical assistance to the general public, and support of state and tribal radon programs.

Lead

Lead is a naturally occurring substance that is toxic when ingested or inhaled. Lead is most hazardous to children under six years of age. Health effects include reduced intelligence and attention span, reading/learning disabilities and behavioral problems. In adults, lead exposure can damage reproductive systems, and contribute to nerve disorders, high blood pressure and other problems.

EPA's ban of lead-based gasoline in the 1970s has greatly reduced lead exposure. Nationally, blood lead levels have dropped 85% since 1980. Nevertheless, lead contamination remains a localized concern in parts of Region 8. Indoor exposure is most often through particles and dust linked to deteriorating lead-based paint. Exposure can also be traced to contaminated soil and water from mine wastes.

EPA provides grant money to states and tribes for public education and testing activities. The agency also certifies training providers and programs to perform inspections, risk assessment and abatement work, and requires public disclosure about lead hazards by builders, realtors, landlords and renovators. EPA is also beginning to focus on outdoor sources of lead exposure -- such as paints used on playgrounds and fences.

Asbestos

Asbestos fibers, widely used in building materials, can cause serious lung diseases including asbestosis, lung cancer, mesothelioma and cancers of the digestive tract.

Asbestos-related diseases have a long latency period and symptoms may not appear until 20-40 years after exposure. The main focus of EPA Region 8's asbestos work is in schools and public buildings. Region 8 provides assistance and oversight for asbestos training, accreditation and certification programs for five of the Region 8 states. EPA directly implements this program in Wyoming and on tribal lands.

Addressing Growth and Urban Sprawl

As in much of the West, many parts of Region 8 are experiencing tremendous population growth. While much of this growth is concentrated along Colorado's Front Range and Utah's Wasatch Front, rural areas across the Region are also being challenged by growth and development pressures. According to the Colorado Department of Agriculture, over 100,000 acres of agricultural lands are being converted to urban development each year in Colorado alone.

While land-use and growth-management activities are the responsibility of state, tribal and local authorities, EPA is uniquely positioned to encourage growth-management measures that take environmental impacts into consideration. EPA Region 8 uses existing authorities under statutes such as the Clean Air Act, the Clean Water Act and the National Environmental Policy Act to help minimize the impacts of development activities. Region 8 also focuses on supporting state, tribal and local efforts. Specific activities include improving communications

and providing technical expertise and resources to manage growth issues such as wastewater disposal, drinking water, water quantity, waste disposal, transportation and air quality, storm water runoff, and wetlands and habitat loss. EPA also provides funding and support for specific projects through programs such as Sustainable Development Challenge Grants.

EPA has promoted and expanded the public's right-to-know about their environment. The Emergency Planning and Community Right-to-Know Act (EPCRA) of 1986 calls for certain manufacturing businesses to submit annual reports on the amounts of toxic chemicals their facilities release. Through EPCRA, the Toxics Release Inventory (TRI) national database was created, which identifies facilities, chemicals manufactured and used, and accidental and routine releases. The TRI has increased awareness and enabled communities to be active participants in negotiations with industry. Over time, the amount of information available about toxics has increased considerably. The list of toxic chemicals in the TRI has nearly doubled since 1993.

Brownfields

A brownfield is a site with actual or perceived contamination that has potential for redevelopment or reuse. There are hundreds of these sites in the Region, from abandoned factories and shuttered gas stations, to aging rail yards. Cleaning up and reusing these areas often helps to

preserve greenspace which would otherwise be used for development.

EPA's Brownfields Redevelopment Initiative empowers states, communities and other stakeholders to assess, clean up and reuse brownfields. Since 1995, EPA has provided up to \$200,000 in seed money to over 300 states, tribes, local governments and nonprofit groups across the nation to expedite cleanup or assessment of local sites. Region 8 efforts include funding pilot projects and research, clarifying liability issues, entering into partnerships, conducting outreach, developing job training programs and addressing environmental justice concerns.

As of 1999, Region 8 has provided funding and technical support for 17 Brownfields Redevelopment Pilot projects. These pilots will test redevelopment models, remove regulatory barriers while ensuring protection, and strengthen site assessment, environmental cleanup and redevelopment efforts. Salt Lake City's 650-acre Gateway District is one example. The area is a former industrial center that is severely

impacted by abandoned sites and changing transportation networks. Efforts are underway to clean up and redevelop the District to expand mixed-use development and provide support facilities for the 2002 Winter Olympics.

Tribal Communities

Region 8 includes 26 federally recognized Indian reservations and 27 tribes. Indian Country encompasses 15.1 million acres, approximately 4.4% of the total land area in Region 8.

One of EPA Region 8's highest priorities is to protect public health and the environment in Indian Country. Many tribal communities are at the same place rural areas of many states were 25 years ago. Many lack basic drinking water and wastewater systems, and the ability to safely manage or dispose of solid and hazardous waste. In addition, many communities on tribal lands face challenging environmental issues including leaking underground storage tanks, access to clean and safe drinking water, and groundwater contamination from animal feedlots.

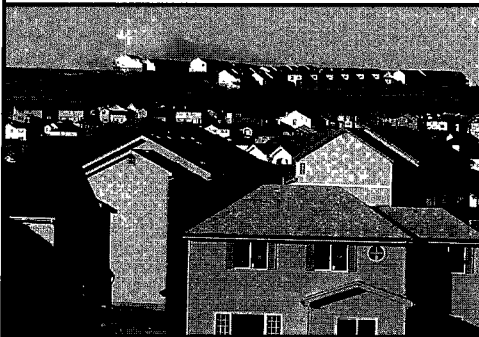
Most Region 8 tribes are still developing the ability to assume full responsibility for running environmental programs. Because Indian Reservations are sovereign nations -- autonomous and independent of state authority -- EPA has what is called "trust responsibility" to directly manage environmental programs in Indian Country. These responsibilities include issuing permits, conducting inspections, taking enforcement



Gateway Showcase Project, Salt Lake City. The abandoned paint manufacturing building shown above will be redeveloped into 50 housing units and retail shops in 2000. Expanding this type of mixed-use development will be a critical step in the revitalization of the Gateway District.

actions, and providing technical and compliance assistance. In 1999, EPA Region 8 conducted over 600 inspections in Indian Country.

EPA's long-term goal is to support each tribe in developing the capacity and expertise to run its own environmental programs. The Tribal Assistance Program also provides general and financial assistance, helps with assessing environmental conditions, and develops environmental management agreements with individual tribes.



New development near Denver, CO. The impacts of growth and development pose potentially significant environmental challenges for both large and small communities.



Water quality assessment work with the Mandan Santee Sioux Tribe in South Dakota. Providing support for environmental program development on tribal lands is a big priority in Region 8.



1990

1991

HEALTHY ECOSYSTEMS

Ecosystems are our basic life support systems in the natural world. Region 8's mountains, canyons, forests, plains and deserts harbor dozens of unique ecosystems -- places that are home to some of the most recognizable and valued areas in the nation. Examples of familiar places where these systems thrive include: Glacier, Rocky Mountain, Zion, Black Canyon of the Gunnison, Arches and Yellowstone National Parks, Utah's Great Salt Lake, Wyoming's Thunder Basin Grassland and the Prairie Pothole Region of North and South Dakota.

Ecosystems Under Pressure

While the march of progress has raised our standard of living, it has also stretched the health of our ecosystems to their limits. Since the early 1800s, human activities have significantly altered natural systems. Region 8 has lost large portions of its native wetland, riparian, forest and prairie habitats to agriculture, mining, residential and commercial development, and water management practices. Many species have suffered as a consequence.

While still some of the most diverse and intact systems in our nation, Region 8's ecosystems are under pressure. Large tracts of open space characterize much of our Region's land area; however, the ecosystems found in these areas are being affected by habitat fragmentation and destruction, and by the pollution of the environments plants and animals need to survive.

Aquatic ecosystems are also being impacted. Seven major river systems, including the Colorado, Missouri and Arkansas, begin in Region 8. These river systems are famously manipulated to provide drinking water, irrigation, flood control, power generation and other benefits. Water quality changes and the elimination of habitats linked to these once free-flowing rivers have been significant. Surface waters are particularly vulnerable to pollution from agriculture, mining and water capture/transport systems. Cumulatively, these pressures have affected communities of fish, birds, insects and plants.

Regulatory Roles

EPA's regulatory responsibilities related to ecosystems are largely encompassed in two laws: the Clean Water Act (CWA) and the National Environmental Policy Act (NEPA). Under the CWA, EPA provides support to state agencies to restore and protect rivers and lakes so they can support healthy aquatic communities. The CWA also includes provisions for protecting surface waters and wetlands from the impacts of development projects. EPA reviews and comments on permit applications submitted to the Army Corps of Engineers in order to ensure compliance with these provisions and to minimize environmental impacts. Region 8's wetlands program also provides grants -- over \$1.5 million in 1999 -- to states, tribes and local governments for wetlands assessment and restoration projects.

Our regional NEPA team has been nationally recognized for its work. In collaboration with other EPA programs and federal agencies, Region 8 staff provided critical analysis that prevented construction of the potentially disastrous New World Mine just a few miles from Yellowstone National Park. The project represented a threat to surface and groundwater and the ecosystems that depend on them. To compensate the mining company for its investment loss, EPA's team initiated a first-of-its-kind agreement where the firm was compensated and the site was acquired by the U.S. Forest Service.

NEPA requires federal agencies to identify and consider the environmental impacts of their actions. EPA independently reviews environmental impact statements (EISs) and offers technical assistance and recommendations to other agencies and the President's Council of Environmental Quality. Because a large part of Region 8 is federally owned and managed land, NEPA activities are critical to protecting ecosystems. Region 8 staff reviews and comments on dozens of EISs each year.



Arches National Park, Utah. Region 8 is home to some of the most scenic and ecologically unique places in the nation.

EPA's efforts to clean up waste sites through the Superfund program also contribute to ecosystem restoration. In Leadville, Colorado, the cleanup of hundreds of acres of contaminated mine waste is leading to improvements in the Upper Arkansas River. For the first time in years, trout are returning to stretches of the river in waters that were once contaminated with heavy metals.



The decline of the bison, in many ways a symbol of the West's natural abundance, serves as testimony to human impacts on ecosystems. Today, a small fraction of the once millions of bison survive in the western U.S.

Enforcement Activities

EPA's enforcement activities also play an important role in ecosystem protection and restoration. For example, Region 8 is increasingly incorporating supplemental environmental projects (SEPs) focused on ecosystem restoration into case settlements. Enforcement work related to Superfund sites is also leading to improvements. Recent highlights include:

- In 1992-1993, an oil pipeline discharged thousands of gallons of oil into Camas Creek on the Flathead Indian Reservation in Montana, causing damage to wildlife, grasses and aquatic plants. In 1999, Region 8 reached a

settlement where the responsible companies paid a \$165,000 penalty and restored the area. The companies also committed to a \$130,000 supplemental environmental project to construct fish passageways on the Jocko River.

Wetlands are among the most productive ecosystems in the world, comparable to coral reefs and rainforests. They provide critical wildlife habitat, filter and improve water quality, store water during floods, and slowly release rain, snow-melt, groundwater and floodwaters. Wetlands are home to nearly one-third of the nation's endangered or threatened species, a testimony to their importance and their decline. Region 8's wetland habitats include marshes, wet meadows, fens, riparian and rare alpine wetlands, and the famous "pothole" wetlands of the plains. These "pothole" wetlands are one of North America's most productive habitats, generating over half the continent's ducks and 15% of its waterfowl population, and supporting over 200 species of migratory birds.



EPA's review and comments on a wetlands permit in Arvada, CO helped local leaders save a pristine urban wetland from development. Instead of being filled in and paved over, the wetlands became Two Ponds National Wildlife Refuge.

Estimated Wetland Losses 1780's - 1980's

State	Acres in 1780	Acres in 1980	% Loss
CO	2,000,000	1,000,000	50%
MT	1,147,000	840,300	27%
ND	4,927,500	2,490,000	49%
SD	2,735,100	1,780,000	35%
UT	802,000	558,000	30%
WY	2,000,000	1,250,000	38%
Total	13,611,600	7,918,300	42%

Source: U.S. Fish and Wildlife Service

Historical wetlands losses in Region 8 have been significant.



EPA's community-based approach has invested heavily in places like the San Miguel watershed in western Colorado. This photo shows wetlands restoration work in the watershed.

This project is intended to restore the threatened bull trout population and preserve one of Montana's genetically pure populations of cutthroat trout.

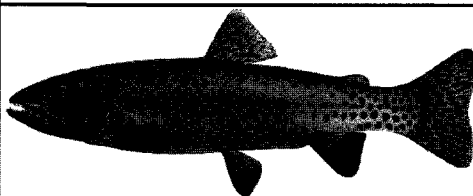
- EPA's litigation against the ARCO mine near Silver Bow Creek -- a tributary of the Clark Fork River in Montana -- is also leading to significant restoration activities. EPA stepped in to begin restoring the severely polluted area in 1995 with an extensive cleanup plan. In 1999 EPA obtained a settlement in which ARCO paid \$80 million to clean up the Superfund site. Additional

penalties, damage payments and cleanup costs totaled over \$160 million, supporting continued cleanup activities and restoration projects such as the construction of 1,600 acres of wetlands in the area. Residents are planning for trails and fishing spots along the reviving stream.

Community-Based, Voluntary Protection

While not a direct regulatory activity, EPA's community-based approach to environmental protection is a cornerstone in ensuring healthy and sustainable ecosystems. The approach relies on local organizations to build consensus in communities as they identify and solve environmental problems. Where local environmental goals correspond to EPA's broad statutory goals, EPA offers communities technical and financial support.

Since 1992, EPA has worked intensively on both small- and large-scale ecosystems. For example, Region 8 is employing the community-based approach to



Greenback Cutthroat Trout. By the early 1990s, habitat loss, water diversions, unregulated fishing pressure and the stocking of non-native trout greatly reduced the distribution and abundance of the native cutthroat trout in Colorado. Recovery efforts for the federally threatened greenback have brought it back and expanded its range so that it has been downlisted from "endangered" to "threatened."

watershed restoration and mine waste issues in the Clear Creek watershed near Denver. In partnership with other agencies and organizations, EPA has realized water quality improvements in Clear Creek that far surpass what could have been accomplished through regulatory approaches alone. Current large-scale, geographic initiatives are now underway in the Upper Missouri River Basin and the Colorado Plateau.

The Missouri is the longest river in the U.S., traversing all or parts of 10 states and 23 Indian reservations. The Upper Missouri basin's aquatic resources are highly threatened. Six major dams and reservoirs have drastically altered seasonal flow patterns; the diverse habitat of its formerly rich flood plain has been largely lost, and water quality is impaired by agricultural runoff. Region 8 is coordinating with partners across the Missouri and Mississippi basins -- using regulatory and non-regulatory methods -- to promote ecosystem protection and restoration in this priority place. Basin stakeholders are working together on an integrated approach to assessing and protecting aquatic resources.





HEALTHY PLANET

“Think Globally. Act Locally,” urged a popular bumper sticker that appeared in the late 1980s. The slogan is a reminder of the environmental roles and responsibilities we all share. Cumulatively, local decisions and issues impact global environmental conditions.

EPA recognizes that making progress in environmental protection depends on the work we do, as individuals, businesses and organizations, to minimize the environmental impacts of our daily activities. Region 8 works with various partners to promote local decision-making that considers the basic question, “How can I become more efficient in how I use the earth’s resources?” We can all do better, and Region 8 is involved in many programs and partnerships that offer technical assistance and incentives to change in ways that benefit the planet and, often, yield economic benefits as well.

Pollution Prevention (P2)

With the 1990 Pollution Prevention Act, EPA made pollution prevention a strategy of choice. By 2000, some 19,000 companies nationwide are expected to be participating in voluntary pollution prevention programs. Their participation will save them almost \$7 billion a year in energy, raw materials, and waste treatment and disposal costs. In Region 8, proactive prevention efforts encompass several areas.

Toxic waste reduction focuses on substances that harm people when inhaled, swallowed or absorbed through the skin. As tracked in the 1997 Toxics Release Inventory (TRI), large industrial and federal facilities in Region 8 released a total of 168 million pounds of toxics into the air, surface water and land. However, these facilities also recycled over 157 million pounds of toxics and used another 36 million for energy recovery. According to the past 10 years of TRI reporting, Region 8 industries have cut their on- and off-site releases of TRI chemicals by nearly 25%, or 50 million pounds, since 1988.

Solid waste reduction and recycling means less use of limited natural resources and less waste sent to landfills. These activities also provide substitute raw materials for manufacturing and promote economic growth by creating new market opportunities. Two EPA programs support this important effort.

- EPA’s WasteWise program encourages businesses to adopt cost-effective practices to reduce solid waste generation, collect waste materials for recycling, and increase the manufacturing or purchase of recycled products. Nationally, since 1994, participants have recycled more than 10 million tons and have purchased more than six million tons of recycled products. Region 8 currently has 31 WasteWise business partners.

• The Jobs Through Recycling initiative (JTR) expands markets for recycled and reusable materials, stimulates economic development and creates jobs. From 1994 to 1999, this program offered grants, market information outreach and networking among recycling professionals. In Montana, for example, a \$35,000 JTR grant to develop local markets for recycled glass has diverted more than 1,000 tons of post-consumer solid waste from landfills.



Cardboard recycling facility. Reusing and recycling materials can minimize waste volumes sent to landfills, conserve natural resources and, in many cases, save money.

Energy Efficiency

Residential and commercial electricity use has increased significantly in the past few decades. In Colorado, for example, residential use doubled and commercial use tripled between 1992 and 1997 alone. Most of this electricity is generated by coal-burning power plants with emissions that can degrade air quality.

With growing demands for power, energy-efficiency measures offer opportunities for individuals and businesses to save money and prevent pollution. These efforts are

targeted at promoting renewable energy such as solar and wind power, reducing energy consumption, and ensuring that energy resources are used efficiently.

In 1991, EPA launched Green Lights®, a voluntary program to encourage corporations, government agencies, and other institutions to install energy-efficient lighting. The program demonstrated that pollution prevention was not only environmentally sound, but profitable too. Green Lights became EPA's flagship prevention program, leading to the current ENERGY STAR® program.

ENERGY STAR is a voluntary partnership between EPA, the U.S. Department of Energy, product manufacturers, local utilities and retailers that promotes energy efficiency, reduces air pollution and decreases operating costs. Targeted sectors include homes, small businesses, buildings and products. By choosing ENERGY STAR products, businesses and consumers



Wetlands revegetation. Individual actions make all the difference in the health of our global environment.

Cumulative Impacts in Region 8

Reduced energy bills for 117 participants by \$530.4 million

Kept 732.8 million pounds of carbon dioxide (CO₂) out of the atmosphere

Removed pollution equivalent to 25,100 cars

Provided environmental benefits equivalent to planting 34,400 acres of trees

Prevented emissions of 3.9 million pounds of sulfur dioxide (SO₂) and 3.3 million pounds of nitrogen oxides (NO_x)

As of January 1, 2000

keep their utility bills down while helping the environment.

Region 8 has recognized 11 ENERGY STAR buildings which, taken together, comprise 6.7 million square feet. The energy-efficiency measures they have adopted are saving the building owners \$1.7 million per year. Region 8's headquarters building in Denver was recently designated an ENERGY STAR building in recognition of the owner's success in improving energy performance. Region 8 has cultivated 234 allies and partners in the ENERGY STAR Buildings Program and 107 in the ENERGY STAR Homes Program.

Global Warming and Climate Change

While scientists and politicians continue to debate the global warming/climate change issue, one thing is clear: All evidence points to a correlation between carbon

dioxide (CO₂) levels and global temperature. According to Antarctic ice core measurements, CO₂ levels are higher today than at any time in the past 160,000 years. Those who believe global warming is happening conclude that if CO₂ levels continue to rise at this rate, temperatures will likely rise too.

Region 8 provides information to the public regarding the possible impacts of global warming, and what can be done to reduce CO₂ emissions and other gases that contribute to the greenhouse effect. Outreach efforts are targeted to four sectors which are likely to be adversely impacted by climate change. These sectors -- which are also uniquely capable of reducing greenhouse gas emissions or communicating the risks of climate change to the public -- include cities, forests and agricultural land managers, outdoor recreation and wildlife organizations, and businesses, lenders and insurance companies.

EPA's ClimateWise program also helps companies turn energy efficiency and pollution prevention into corporate assets. Participants reduce energy use and greenhouse gas emissions and learn how to raise profits and productivity through management practices focused on avoiding costly remedial environmental work. Participants are encouraged to innovate in designing approaches that work best for their organization. Region 8 currently has 40 ClimateWise partners.

By choosing P2 options such as ENERGY STAR products, individuals can help reduce the huge "ecological footprint" of our consumer-oriented society. Did you know, for example, that the average American consumes about 50 times more goods and services than the average Chinese? With less than 5% of the world's population, we consume about 20% of all metals, 25% of all fossil fuels, and 33% of all paper produced. Our 270 million citizens drive as many miles as the rest of the world combined. We also produce about 72% of the world's toxic waste.

Personal choices add up. Next time you're at the hardware store or shopping for a new vehicle, consider the consequences of your purchases. When multiplied by 270 million consumers, lifestyle choices such as higher-mpg cars, compact fluorescent lightbulbs, and energy-efficient windows and appliances make a big difference.

Polychlorinated Biphenyls (PCBs)

PCBs are very stable man-made chemicals that bioaccumulate in living things at the top of the food chain, including fish, birds, mammals and humans. Commonly used as insulating fluids in electrical equipment, PCBs have been found all over the world, constituting a global threat to human health and ecosystems. For example, PCBs interfere with the reproduction of phytoplankton -- the base of the ocean food chain

and a large contributor to the world oxygen supply.

EPA Region 8 recently presented a paper, "PCBs, Mining and Water Pollution" to the international community at the 1999

International Hazardous Waste Management conference in Tucson AZ. The Region is working with the United Nations Environmental Program (UNEP) on worldwide distribution of the paper, which describes the hazards of abandoning PCBs in underground mines. Region 8 is also partnered with UNEP in conducting an inventory of PCBs in the former Soviet Republics and third-world countries.

Construction and demolition debris makes up 15-25% of total U.S. landfill volume. ReSource 2000 is an EPA-supported nonprofit organization that demonstrates how homes and buildings can be "deconstructed" instead of demolished, to extract reusable or recyclable materials. For example, demolishing a 3,000-square-foot house would fill 15 large dumpsters with trash bound for the landfill. Instead, ReSource 2000 can salvage up to 80% of the materials for reuse or recycling, reducing the landfill waste to three dumpster loads. The reusable materials -- doors, lumber, windows, lighting, fixtures, sinks, etc -- are sold for 50-70% of retail.

Chicagoand Bicycle Federation



FUTURE CHALLENGES

The U.S. has achieved remarkable improvements in environmental quality over the past 30 years. This success is largely due to strong environmental laws that have evolved over time, and the coordinated efforts of EPA and its many partners. As the character of environmental degradation and pollution has changed, so too have EPA's approaches. Today, challenging "second generation" issues such as urban sprawl, nonpoint source pollution and global climate change require more integrated, collaborative and innovative strategies. EPA continues to develop new ways of doing business to address these issues more effectively.

Having a Denver office allows EPA Region 8 to tailor its work to the unique circumstances of our six states. Region 8's states are landlocked, mostly arid and predominantly rural. Here, abundant public lands and natural resources support agricultural and extractive industries, as well as strong recreational and tourism-based economies. Growth is also a dominant theme. Between 1990 and 2000, one million new residents moved into Region 8 and over 1.5 million more are expected by 2010.

In approaching the environmental impacts related to these circumstances, Region 8 employs a variety of initiatives and voluntary programs that focus on developing partnerships, increasing compliance,

enhancing agency performance and addressing specific issues such as agriculture and mining.

Sustainable Development

EPA recognizes sustainable development as the touchstone for environmental protection. The term sustainable development means "to meet the needs of the present without compromising the ability of future generations to meet their own needs." A sustainable United States will have a growing economy, opportunities for satisfying livelihoods and a high quality of life for generations to come.

Region 8 is highly innovative in promoting sustainable development. For example, Region 8 and the Denver regional office of the U.S. Department of Energy signed a framework agreement in 1999 to promote and jointly market energy efficiency, renewable energy and environmental technologies. This collaboration will boost resource efficiency, improve customer service and send a stronger, more consistent message to the public about the benefits of clean energy.

EPA also uses Sustainable Development Challenge Grants to support state, local and community-based initiatives. Region 8 received over 40 grant applications in 1998, and allocated some \$328,000. Six projects were funded in 1999 for a total of \$366,000. Many grants

support projects directly related to growth and development issues, including rewriting zoning rules in flood-prone areas of North Dakota, and assessing land-use patterns using satellite imagery in Colorado's Big Thompson watershed.

Region 8 also hosts workshops and delivers presentations, training and technical support to many organizations. For example, Region 8 staff supported the design of green building standards for the redevelopment of the former Denver Stapleton Airport property. In 1999, the Malaysian government requested staff expertise in designing an environmental auditing program for its industrial sector. The Region also delivered a week-long series of sustainable development workshops at the 1999 Bi-national Commission meeting of the U.S.-Mexico Border 21 program in Ensenada, Mexico.

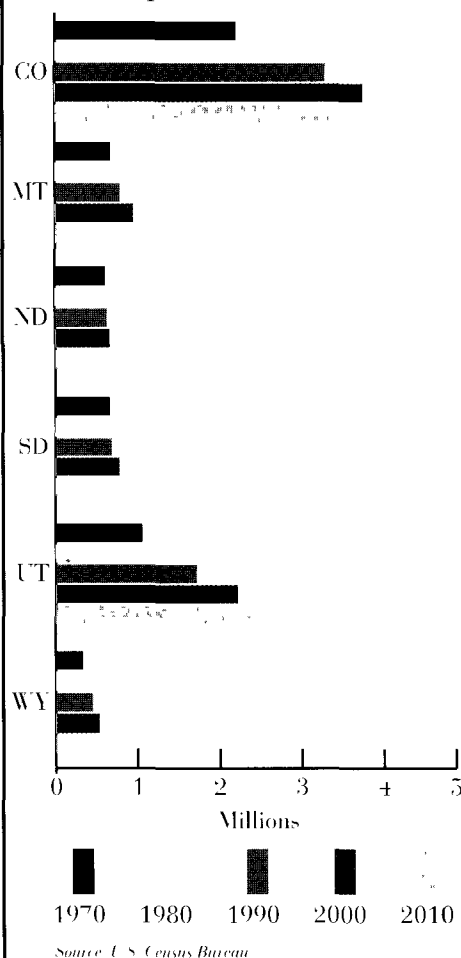
Agriculture

Agriculture, including crop and livestock production, is one of the most important economic sectors in Region 8. It is also the leading cause of water quality problems in our states. Polluted runoff from cropland, the misuse of pesticides, and poor grazing practices are among the most widespread concerns associated with agricultural activities.

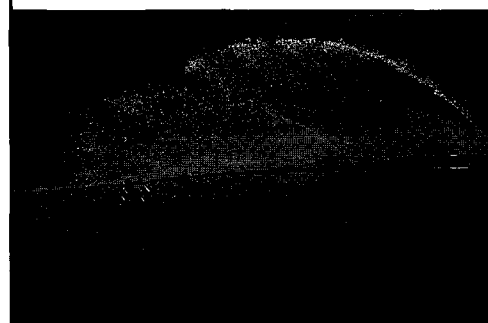
Recognizing that the participation of agricultural interests is vital to future environmental progress, Region 8 recently established improving relationships with the agricultural community as its highest priority. To ensure an



Historical and Projected Population Growth



integrated, effective response to critical issues, Region 8 recently established an Agricultural Advisory Team (AAT). The AAT has developed working relationships with key stakeholders including our State Departments of Agriculture, State Farm Bureaus and other agricultural groups. Semi-annual Agriculture Partnership meetings foster understanding and a coordinated approach to problem-solving, often



Agriculture, including crop production and grazing, dominates much of Region 8's land area. EPA is working in partnership with the agriculture community to minimize the environmental impacts of these activities.

resulting in a commitment to action. The team also sponsors a speakers series, provides program support and advises staff on various issues. Priority areas include animal feedlots, pesticide risk reduction, sustainable agricultural practices, water issues, genetic engineering, communications and partnerships.

Mining

Addressing the environmental impacts of past mining activities is an enormous challenge. There are

Utah's strong economy, high quality of life and environment have contributed to a growth rate twice the national average and a total population above 2 million and rising. In 1997, this unprecedented growth spurred the emergence of a public/private partnership process called Envision Utah. This process is designed to guide businesses, residents and governments in growth management and land-use policies based on a shared vision, a "Preferred Growth Strategy." Envision Utah has conducted 70+ public meetings and surveys of 17,000+ families that generated data on demographic, economic and environmental conditions along the Wasatch Front. This information, plus several demonstration projects, will inform communities, businesses and governments about their options for the future. EPA has supported this initiative since 1998.

Past Producer Hard-Rock Mining Sites

Watershed and National Rank		# of Sites
#2	Clear Creek CO	1343
#3	Upper Dolores, CO-UT	875
#4	Arkansas Headwaters CO	724
#6	St. Vrain CO	676
#7	Upper Arkansas CO	578
#8	San Miguel CO	519
#14	Lower Dolores CO-UT	350
#15	Upper Missouri MT	329

Source: U.S. Geological Survey

Watersheds in Region 8 rank among the highest in terms of numbers of abandoned hard-rock mines.

over 13,000 abandoned hard-rock mine sites in Region 8, and many continue to threaten human and ecosystem health. Runoff from exposed rock and leaching piles can carry heavy metals and toxics into nearby rivers and streams, acidifying and poisoning large areas of water. In some areas, native fish and animal populations have been severely impacted, requiring extensive cleanup efforts. Restoring water quality and soils in severely polluted areas is a priority. Region 8's efforts build on national and regional initiatives to develop multi-media and multi-statute approaches to managing abandoned and active mines.

Over half of Region 8's most serious hazardous waste sites -- those on the Superfund National Priority List (NPL) -- are abandoned mines or processing facilities, and many new and proposed NPL sites are related to mining. The Region has made considerable progress at these sites. Through Superfund -- for example, wastewater treatment plants now manage discharges from

the worst abandoned mine sites. Region 8 also is working to ensure that current mining operations provide adequate measures for protecting the environment.

Mine waste issues are also addressed through community-based partnerships, watershed approaches and information technology tools such as geographic information systems (GIS). Region 8's mining team helps coordinate these activities, focuses on emerging mining-related environmental issues, and aids the enforcement team in employing a sector-based approach to promote environmental compliance.

Environmental Justice

The Environmental Justice (EJ) program evolved from the idea of "environmental equity" -- a concept that began gaining momentum in the mid-1980s. The basis of EJ is that no community

The InterTribal Bison Cooperative in South Dakota received a 1998 Challenge Grant to restore the American Buffalo to its 49 member-tribes' reservations. In addition to benefiting the Great Plains environment and creating an economic development opportunity for the tribes, this initiative represents an opportunity for cultural revitalization. Restoring the buffalo nation represents a return to the traditional way of life, a holistic approach that balances environmental integrity with a strong local economy.

should be forced to bear a disproportionate share of environmental impacts. An Executive Order signed by President Clinton in February 1994 required federal agencies to incorporate environmental justice considerations into decision-making, "to the maximum extent practical and permitted by law."

Region 8 established an EJ program in 1995 with the goal of incorporating EJ considerations into EPA program work. Now in its sixth year, the EJ program has conducted over 30 EJ training

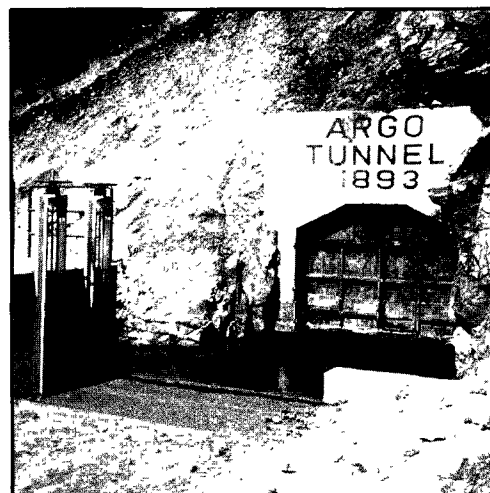
workshops, and has provided program guidance and consultation services to state and federal agency counterparts. The EJ program also provides communities educational and financial assistance in identifying and addressing local environmental problems. From 1994-1999, the program has provided 94 grants totaling \$2.7 million to local governments, colleges and universities, nonprofit organizations and religious institutions. Tribes have received 39 grants totaling over \$1 million,

Compliance Assistance

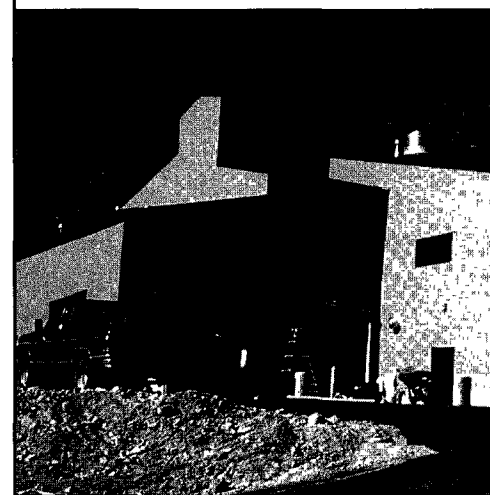
In the past decade, compliance assistance has emerged as an effective tool in helping the regulated community meet and exceed environmental requirements. Although EPA will always vigorously pursue those who violate environmental laws, providing brochures, manuals, training, outreach, and technical assistance to industry can significantly increase voluntary compliance. In 1999, for example, EPA opened four new Compliance Assistance Centers for the paints and coatings industry, transportation industry, small and medium-sized chemical manufacturers, and local governments. There are now a total of nine compliance centers online, which receive an average of 750 website hits per day. In addition to the centers, EPA's other compliance assistance efforts reached approximately 330,000 entities through on-site visits, hotlines, workshops, training and distribution of checklists and guides in 1999 alone.

In 1996, Congress passed the Food Quality Protection Act (FQPA) -- a law that fundamentally changes the way EPA regulates pesticides. The FQPA mandates a single, health-based standard for all pesticides in all foods. It provides special protections for children, expedites the approval of safer pesticides, and requires the re-evaluation of pesticide registrations and tolerances.

EPA is reviewing 9,700 pesticide residue tolerances to ensure they meet new, more stringent standards and are protective of children. This massive effort is focusing on the highest-risk pesticides first. As of August 1999, EPA had reviewed the first third of tolerances. Over the next fourteen months, EPA will also be reviewing the 36 remaining organophosphate pesticides, including Dursban, Diazinon and Malathion.

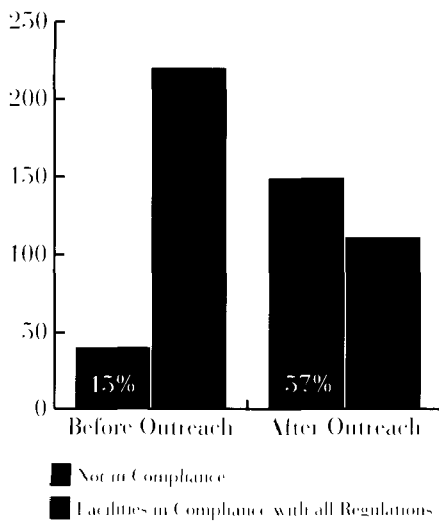


Pollution from abandoned mining sites is a big water quality problem in parts of Region 8. EPA's Superfund and Community-Based Environmental Protection programs have been working in the mine-impacted Clear Creek Watershed since the early 1990s. Clear Creek, a popular recreational attraction, also provides drinking water to over 300,000 people. For years, the Argo Tunnel (top), a mine waste conduit, contributed nearly 1,500 pounds of metals per day into the creek. In 1998, EPA and the State of Colorado funded the construction of the Argo treatment plant (bottom), which now eliminates 99% of the metals in the acidic mine water.



Region 8's recent initiative in the dry cleaning sector is just one example of a compliance assistance success. EPA made the review of dry cleaning operations and their use of tetrachloroethylene ("perc" or PCE) a priority in the 1990s. "Perc", a toxic solvent commonly used by dry cleaners, is suspected of causing cancer in humans. Region 8's strategy focused on identifying dry cleaner sources, increasing awareness of regulations among owners and operators, and encouraging the adoption of voluntary pollution prevention measures. EPA, state agencies and small business programs did extensive work to conduct inspections and assess initial compliance. Subsequent assistance

Improving Compliance in the Dry Cleaning Industry



Region 8's outreach and assistance efforts with dry cleaning operations increased compliance by 42%, in large part due to the purchase of cleaner machines. In addition, operator's pollution prevention initiatives reduced perc emissions by about 33 tons.

yielded impressive compliance increases and reductions in perc emissions.

Closing Thoughts

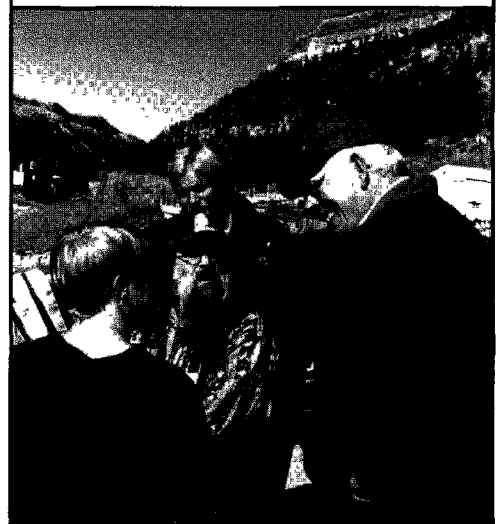
Nationally and regionally, we have achieved significant improvements in the quality of the air we breathe, the water we swim in and drink, and the places we live. Though few may remember when air quality violations and raw sewage spills were common occurrences, our environment is in far better shape today than a few decades ago.

It is notable that EPA's laws and programs are working in harmony with economic prosperity. Nationally, our population grew 31% and our Gross Domestic Product 130% from 1970-1997. At the same time, air emissions have dropped by nearly 30%, 40% more surface waters are fishable and swimmable, and toxic releases are down over 40%. It has become clear that economic and social health are linked with a healthy environment. Nowhere is this more evident than in Region 8 where environmental assets are a driving force behind economic growth and diversification.

Despite major progress, many challenges remain. The impacts of diffuse, nonpoint sources of pollution remain a stubborn threat to air and water quality, and ecosystem health. Data tell us that children, despite general progress, are still exposed to significant health risks from air pollution and toxics. Many of our rivers and lakes are still not clean enough for swimming. Environmental

conditions on tribal lands are often far behind those in the rest of the nation.

Maintaining and furthering environmental gains is not EPA's job alone. EPA partners with state and federal agencies, local governments, tribes, community groups, environmental organizations, private industry and individuals to achieve shared environmental goals. Today, for example, states are doing more than ever to protect public health and the environment. Tribal governments and local communities are also contributing to progress. EPA recognizes that fulfilling its mission depends on working effectively with these partners. Only together can we hope to achieve Region 8's vision of a clean, healthy environment for future generations, where all people care about the environment and act to sustain its integrity.



Regional Administrator Bill Yellowtail discussing environmental project work with local officials in San Miguel County, Colorado.

U.S. Environmental Protection Agency Region 8

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Helena, Montana Operations Office: 406-441-1123
Homepage: <http://www.epa.gov/region08/>

Information Resources

EPA Headquarters Homepage
<http://www.epa.gov>
Envirofacts
http://www.epa.gov/enviro/index_java.html
Surf Your Watershed
<http://www.epa.gov/surf3/>
Center for Environmental Information and Statistics
<http://www.epa.gov/ceis/>
Direct Links to Environmental Reports
<http://www.epa.gov/ceisweb/ceishome/digitalib/ceisrpts.html>

Region 8 State Agencies

Colorado Department of Public Health and the Environment
<http://www.cdphs.state.co.us/>
Colorado Department of Agriculture
<http://www.ag.state.co.us/>
Montana Department of Environmental Quality
<http://www.deq.state.mt.us/>

Montana Department of Agriculture

<http://www.agr.state.mt.us/>

North Dakota Department of Health

Environmental Health Section

<http://www.health.state.nd.us/ndhhd/environ/>

North Dakota Department of Agriculture

<http://www.state.nd.us/agr/>

South Dakota Department of Environment
and Natural Resources

<http://www.state.sd.us/dem/dem.html>

South Dakota Department of Agriculture

<http://www.state.sd.us/dca/dca.html>

Utah Department of Environmental Quality

<http://www.deq.state.ut.us/>

Utah Department of Agriculture

<http://www.ag.state.ut.us/>

Wyoming Department of Environmental Quality

<http://www.deq.state.wy.us/>

Wyoming Department of Agriculture

<http://www.wyagric.state.wy.us/>

Region 8 Tribal Information

EPA Region 8 Tribal Assistance Program

<http://www.epa.gov/region08/states/tribal.html>



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